maceutical health care standards and outcomes. Without close monitoring of key health care indicators and outcomes, volume (prescription) limitations introduced by the recent Healthcare Reform can have adverse and inevitable long term impact.

PHP49

THE PHARMACIST'S PERCEPTION OF THE SPLITTING EXTENDED RELEASE AND ENTERIC-COATED FORMULATION DRUGS

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OBJECTIVES: Extended release and enteric coated formulations make up 7.8% of all drugs, and the most frequently used drug is an agent affecting circulatory, digestive system. The objective of this study is to analyze of extended release and enteric coated drugs on pharmaceutical reimbursement item list in Korea and evaluate the dispensing of extended release and enteric coated drugs, which is enforced by the National Health Insurance. **METHODS:** The analysis used a questionnaires survey for 169 pharmacists in the hospital pharmacy and community pharmacy(Response rate: 73.8%). The questions include; prescribing change after enforcement by National Health Insurance, prescription correction, change of pharmacy works, expansion of the range of enforcement, provision of information and prescribing error prevention. The statistics methods use Chi-square, AVOVA, t-test, McNemar test by STATA/SE10.($p<0.05$). **RESULTS:** Of extended release and enteric coated formulations, 33.9% were not available in other dosage forms. After enforcement by National Health Insurance, the rate of splitting and crushing of extended release and enteric coated drugs decreased, but pharmacies in tertiary care hospitals had increased workload because of prescription corrections. Prescription was not changed, because patients take medicines for a long time. Most of pharmacists agreed on the expansion of drug range, but 65.7% of pharmacists wanted the enforcement only for hospitals. When pharmacists corrected their prescribing error, the biggest problem was a lack of other dosage forms. To prevent extended release and enteric coated from splitting and crushing, pharmacists want in the following ways; prescribing code prohibits into order computer system, warnings and alerts on prescribing, developing many other dosage forms. **CONCLUSIONS:** What is needed are medication-use system improvements and the creation of lists with suggestions for alternative products on the formulary. Also, pharmaceutical companies should make an effort to develop other dosage forms.

PHP50

IRRATIONAL USE OF INJECTABLE FORM OF DEXAMETHASONE: A WARNING FOR HEALTH SYSTEM IN IRAN

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OBJECTIVES: Irrational prescribing of injections is widespread in Iran. According to statistics of National Committee of Rational Drug Use (NCRUD), based on data from insured prescriptions, more than 40% of prescriptions have at least one injection in which injectable dosage form of dexamethasone is on the top of list. The aim of this study is to describe the prescribing pattern of dexamethasone in general practitioners' prescriptions from 2006 to 2009. **METHODS:** A retrospective cross-sectional study was done on insured prescription during 4 years. All insured prescriptions which were collected in special software called Rx Analyst during the study period in the NCRUD were reviewed for prescriptions included injectable dosage form of dexamethasone. **RESULTS:** A total of 150,630,381 Prescriptions were reviewed in which 73,808,887 were detected to be included at least one injection. Among prescriptions with injections, there were more than 30 percent of prescriptions which had at least one injection form of dexamethasone making it the first prescribed medicine by general practitioner. An overall increasing linear trend in prescribing pattern of injectable dosage form of dexamethasone was evident over the observation period. The percent of general practitioners' prescriptions which had injectable dosage form of dexamethasone is 15.46 in 2006, 15.93 in 2007, 16.64 in 2008 and 16.94 in 2009. **CONCLUSIONS:** Irrational prescribing pattern of dexamethasone injection is obviously determined according to the results of this study. It seems that general practitioners are trying to substitute pain relievers' drugs by injectable dosage form of dexamethasone. A multi-interventional policy is needed to correct the pattern use of dexamethasone.

PHP51

PILL BURDEN IN SOUTH AFRICAN PATIENTS WITH MULTIPLE RISK FACTORS FOR METABOLIC SYNDROME

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OBJECTIVES: Metabolic syndrome is a cluster of several common metabolic disturbances, including inter alia hypertension, hyperglycaemia and dyslipidaemia. Each of these risk factors requires multiple agents to reach desired therapeutic goals. The aim was to determine the average pill burden level in patients treated concurrently with antidiabetic-, antihypertensive- and lipid-lowering agents. **METHODS:** A retrospective, quantitative drug utilization review was conducted utilizing national medicine claims data obtained from a South African Pharmaceutical Benefit Management company for the period of January 1, 2008 to December 31, 2008. Average pill burden (AvPB) was calculated as the average number of tablets received per prescription over the study period divided by the number of days medication was supplied for. Combination products were counted once. As-needed-medication and other chronic medication were excluded from the analysis. Data for 17 866 patients were analysed using the SAS for Windows 9.1® programme. **RESULTS:** Patients had an overall AvPB of 2.7±1.20 per prescription, with a rate of 2.8±1.21 among males (n = 9 632) vs. 2.6±1.18 for females (n = 8 234). Patients aged 0-15 years (n = 2) had an AvPB of 1.2±0.30 per prescription, vs. 2.3±1.49 for those aged 16-30 years (n = 53), 2.6±1.11 for those 31-45 years (n = 992), 2.8±1.18 for those 46-60 years (n = 5 768), 2.8±1.23 for those 61-75 years (n = 7 641) and 2.5±1.17 for those older than 75 years (n = 3 410). **CONCLUSIONS:** Metabolic syndrome patients are prescribed multiple drug therapies. Our results show that the average pill burden among private health care South African patients receiving antidiabetic-, antihypertensive- and lipid-lowering agents concurrently were the highest among men, and increased progressively with age to peak in those aged 61-75 years. Further studies are necessary to determine the influence of pill burden on adherence, drug interactions and treatment cost.

Health Care Use & Policy Studies – Equity And Access

PHP52

INEQUALITIES IN THE UTILIZATION OF HOME HOSPICE SERVICES IN HUNGARY

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OBJECTIVES: Hospice service appeared in 1991, when Hungarian Hospice Foundation was established. More and more hospice institutions were started their works in this period, which type was home care, palliative hospital ward and complex, which provides both of them. In our study we are analyzing the spatial distribution of Hungarian hospice service. **METHODS:** In 2008, number and activities of hospice service was examined and we have been drawn attention for financial data by our survey with data of National Health Insurance Fund and Central Statistics Office. We analyzed the county and regional distribution of hospice services. **RESULTS:** Thirty hospice care providers were reimbursed by the National Health Insurance Fund Administration in 2008. The total number of nursing days were 53,113 in Hungary. The number of nursing days per 10,000 populations showed a significant difference across the regions with a national average of 52.88 days: Western Transdanubian Region (86.64), Northern-Hungarian Region (83.84), Southern-Transdubian Region (81.28), Southern Great-Plain Region (77.31), Central-Transdanubian Region (59.62), Central Hungarian Region (32.23) and Northern Great-Plan Region (1.68). At county level we found similar within country differences with the highest value in Nógrád county (190.83 days/per 10,000 population) and the lowest in county Jász-Nagykun-Szolnok and Fejér (< 7 days/per 10,000 population). **CONCLUSIONS:** The regional differences in hospice care are high among Hungarian regions and counties. A further analysis is required to explore the reasons behind these huge differences.

PHP53

ASSESSMENT OF THE ATTITUDES OF THE GENERAL PUBLIC TOWARDS SUPPLEMENTARY CRITERIA TO BE USED IN P&R DECISION MAKING PROCESS IN POLAND

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OBJECTIVES: To explore the attitudes of the general public towards the principle of QALY maximization in pricing and reimbursement decision-making process in Poland. **METHODS:** Cross sectional survey of a random representative sample of 1000 residents was preformed. Face-to-face interviews were conducted using a structured questionnaire. The final format of the questionnaire included refinements based on a pilot survey. Respondents rated statements concerning attitudes to equity on a Likert scale. Two hypothetical experiments were designed to elicit preferences for QALY maximization. In the first experiment, responders had to allocate a given limited budget to 400 patients with non-fatal disease, 100 patients with fatal disease, or a combination of patients with fatal and non-fatal disease. The QALY gain per patient was assumed the same for both groups. In the second experiment, responders prioritized a given treatment to either 100 patients with eight years or 100 patients with two years of baseline life expectancy. The survival gain per patient resulting from the new treatment was eight years for first group and varied from two to eight years for the second group. **RESULTS:** The study indicated strong support for the statements about equity (42% agreed and 44% strongly agreed). In the first experiment, 75% chose to allocate budget to both groups of which 50% preferred equal distribution. In the second experiment, if survival gain per patient was equal for both groups, 57% chose treatment for group with shorter baseline life expectancy. If survival gain per patient was larger for group with longer baseline life expectancy, 49% still chose treatment for group with shorter life expectancy. **CONCLUSIONS:** General support for statements expressing equity was confirmed by two experiments. Instead of QALY maximization, a significant group of responders took into consideration needs of both patients' groups irrespective of costs and disease severity irrespective of QALY gain.

PHP54

PREDICTORS OF AVOIDABLE EMERGENCY ROOM VISITS AMONG HIGH COST MEDICAID ENROLLEES

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OBJECTIVES: Research has shown that Medicaid enrollees in the USA are the most frequent users of the Emergency Department (ED) services. Several studies have demonstrated that a high proportion of the ED visits could be avoided. The purpose of this analysis is to examine the demographic and health system delivery characteristics that are associated with avoidable ED visits (AEDV) among a high risk, high cost Medicaid population between 2008 and 2009. **METHODS:** One year claims dataset of a sample of high cost, high risk Medicaid enrollees in Houston, Texas was used for the analysis. This was design following the Andersen-Aday theoretical

framework for studying access to health care. ED visits were classified into avoidable or not using the New York University algorithm. Patient complexity was measured using the Chronic Illness Intensity Index (CI3), an index used to measure need of case management intensity. We performed logistic regression models to test for significant association between AEDV, and population at risk and health care delivery characteristics. **RESULTS:** We found that 69% (179) of our population had an ED visits during 2008-2009. Of these visits, 60% were classified as AEDV. The analysis showed that women were 33% less likely to have an AEDV per month. Age was negatively associated, with younger patients being more likely to have AEDV. More complex patients were 6.6% more likely to have an AEDV. For every extra physician a patient visited, the probability of having an AEDV per month increased by 2.4%, however this was not significant ($p = 0.06$) at 95% confidence interval. **CONCLUSIONS:** Among high cost, high risk Medicaid patients there are certain patient characteristics that can allow us to identify those at higher risk of having an AEDV. This information could be use to identify groups that would benefit from interventions to reduce ED utilization.

PHP55

A REVIEW OF THE NICE APPEALS PROCESS

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OBJECTIVES: Formal systems of health technology appraisal (HTA) can directly inform resource allocation in healthcare systems and have contributed to the equitable and efficient allocation of such resources. To engender and maintain support from a wide range of stakeholders it is important that HTA systems are seen a socially just, particularly in the face of contentious decisions. Effective appeals processes, internal or judicial, can have an important role in meeting this goal, enabling stakeholders to directly question the evidence considered, its interpretation, and the decision making process. We conducted an empirical review of the results of all appeals made to the National Institute for Clinical Excellence (NICE) between the years 2000 and 2010, and consider whether NICE fulfills these requirements. **METHODS:** A retrospective review of all completed NICE technology appraisals published between March 2000 and October 2010 was conducted. Each technology appraisal was investigated for appeals. Published appeals were then categorized by appeal substance, stakeholder, and outcome. The results were presented as absolute numbers and proportions of overall responses. **RESULTS:** In this study 29% of appraisals resulted in a published appeal of which 41% were upheld. The most common ground for an appeal, 59% of total, was perversity of the decision, the main substance for those appeals was misinterpretation of the clinical or cost-effectiveness evidence. By proportion of appeals upheld the most successful appeal point was that the HTA did not meet the scope or was deemed to be inequitable. Appeals involving a professional body or patient group were also more likely to be successful. **CONCLUSIONS:** Examination of appeals to NICE would suggest that a socially just and effective appeals process is in place. Decisions are reversible and transparent and stakeholders can both participate in and question the decision process.

Health Care Use & Policy Studies – Formulary Development

PHP56

THE EMERGENT ROLE OF THE SPECIALIST PHARMACIST AS AN IMPORTANT STAKEHOLDER IN MARKET ACCESS

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OBJECTIVES: Over the last decade, specialist pharmacists across Europe have seen an emergent role in many areas of the healthcare pathway. This research examined four key domains - clinical, policy, education and research - of influence of specialist pharmacists with goal of understanding how they can impact market access of drugs. **METHODS:** Structured interviews with 25 specialist oncology pharmacists from EU5 exploring various aspects within the four identified domains of influence. **RESULTS:** A selection of the most important roles of the specialist pharmacist by domain is presented below: Clinical: 1) Coordinate safe and timely administration of drugs and supportive treatment; 2) Coordinate outpatient supportive care focusing on management of symptoms; and 3) Help develop treatment guidelines to ensure optimal use of supportive care medications. Policy: 1) Provide formulary review for new drugs, and 2) Facilitate reimbursement for a more efficient practice. Education: 1) Educate patients and members of the HC team about drugs and their expected side effects and management, and 2) Educate members of the public about prevention strategies and recommendation for screening and early detection. Research: 1) Conduct internal treatment protocol audits to optimise patient care pathway, and 2) Participate in institutional review board for approval of clinical trials as well as scientific review and monitoring committees. **CONCLUSIONS:** A cornerstone of market access is identification of important stakeholders within a health care economy with the goal of understanding the roles they play in the care pathway. The specialist pharmacist is an often overlooked, but increasingly important stakeholder in the European health care system. The multitude of roles played by the specialist pharmacist is in itself evidence of increasing importance of the role. Pharmaceutical companies will need to engage more closely with specialist pharmacists to ensure better patient outcomes through appropriate use of drugs leading ultimately to increased market access.

PHP57

CENTRALIZED DRUG ASSESSMENT IN CATALONIA: WHERE WE HAVE GONE SO FAR?

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OBJECTIVES: The Committee for the Assessment of Hospital Drugs, led by the Catalan Agency of Health Information Assessment and Quality, has provided evidence-based information to regional health care decision-makers in Catalonia about the added therapeutic value (ATV) of centralized approved drugs fit into the orphan or advanced therapies category or have conditional approval or were approved in exceptional circumstances. This study describes the committee's activity since its creation. **METHODS:** Systematic reviews of efficacy, safety and cost-effectiveness are conducted upon request from the Pharmacy Directorate and results are appraised by expert panels. **RESULTS:** A total of 22 drugs (24 indications) for an estimated population of 1.100 patients have been assessed. Most drugs were granted approval for two major therapeutic areas: onco/hematological (41%) and metabolic diseases (32%). Orphan designation had been given to 70% of all indications. Only 8 indications were given positive opinion based on 2 clinical trials. Most pivotal studies were randomized phase III trials and were considered to have moderate (63%) to high (25%) risk of bias. Placebo was the most frequent comparator in controlled studies but was only considered appropriate in half. Primary endpoint was a surrogate/intermediate endpoint in 94% of studies. Relevance of efficacy results was difficult to interpret due to design flaws, small samples and short-term follow-ups. Scarce or no data on effectiveness was available. Information on comparative safety was also scant and limited by short-term follow-ups. At time of assessment cost-effectiveness data was missing in 66% of the indications. Reported base-case incremental cost-effectiveness ratios from manufacturers ranged from 16.000-565.000€/QALY. **CONCLUSIONS:** Defining ATV of new entities at the time of introduction proved a challenge because of low quality studies and lack of information about relative effectiveness. Registers and/or risk-sharing schemes may be an alternative to gather more information new about drugs and establish their real ATV while facilitating access.

Health Care Use & Policy Studies – Health Care Costs & Management

PHP58

TOWARDS COST-EFFECTIVENESS ANALYSIS OF THE HEALTH AND WELLBEING BENEFITS OF URBAN GREEN SPACE: A MAPPING REVIEW

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OBJECTIVES: Urban green spaces (UGS) are thought to impact on health and wellbeing. Cost-effectiveness analysis (CEA) can help to determine if provision or interventional use of urban green spaces can contribute to population health in a cost effective manner. This mapping review aims to characterise the study designs, independent variables, outcomes and outcome measures reported in the literature. **METHODS:** Key health and medical databases were searched. Studies of any design (except reviews) which attempted to value the health and wellbeing effects of UGS were included. One reviewer selected studies with a proportion checked by a second and third reviewer. Data were extracted from abstracts using a standardised form. Data were coded using a grounded theory approach and synthesised in graphical and tabular form. **RESULTS:** A total of 189 citations were included. The most common study design was cross sectional regression analyses; there were only three randomised controlled trials. Many putative independent variables were identified, including psychological, socio-economic, environmental and interventional variables. Settings and populations also varied. Outcomes coded as health behaviours included physical activity, visit frequency, nutrition and social interaction; those coded as health outcomes included general health, mental health, quality of life, wellbeing, mortality, obesity and cardiovascular indices amongst others. Outcome measures were generally not compatible with CEA. Amongst 61 economic studies, the most common study type was hedonic pricing. Only one limited CEA analysis was identified. **CONCLUSIONS:** Few randomised studies have been performed and available evidence would not allow a traditional CEA. Existing trials have limited external validity according to criteria normally used in health contexts. Current evidence may better lend itself to logic modelling, as the causal pathways are long and complex and green space is likely to act at both the individual and population level. To aid CEA, future research should carefully choose study design, outcomes and outcome measures.

PHP59

ESTIMATION OF INCREASES IN DIRECT MEDICAL EXPENDITURES ASSOCIATED WITH MEDICATION NONADHERENCE AND POTENTIAL SAVINGS FROM INCREASED ADHERENCE

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OBJECTIVES: We estimated increases in medical expenditures due to medication nonadherence and potential savings of increasing adherence for members of a prescription-drug benefit plan taking medications in four drug therapy classes (TCs). **METHODS:** We used data from the Medical Expenditure Panel Survey (MEPS) to estimate functional relationships between adherence and resource utilization for patients taking medications in four TCs. Resource use included all-cause and disease-specific annual hospitalizations and emergency room (ER) visits. TCs included depression, diabetes, high blood cholesterol (cholesterol), and high blood pressure or heart disease (heart). Adherence was estimated using the medication possession ratio (MPR). MPR less than 80% was considered nonadherence. Average medication expenditures, by TC, was obtained from a large prescription-drug database. Expenditures per hospitalization and ER visit were estimated from MEPS. Unit costs and functional relationships between adherence and resource use were applied to estimate annual resource use and medication expenditure. Increased expenditures due to nonadherence were estimated for nonadherent patients ver-